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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,620	10/29/2003	Manoj Singhal	15154US01	7311
23446 7590 04/10/2008 MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661				
EXAMINER				
SAINT CYR, LEONARD				
ART UNIT		PAPER NUMBER		
2626				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/697,620

**Applicant(s)**

SINGHAL, MANOJ

**Examiner**

LEONARD SAINT CYR

**Art Unit**

2626

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 13, 15 - 19, and 21 - 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4 - 13, 15 - 19, and 21 - 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1, 2, 5 - 8, 12, 13, 15 - 19, and 21 - 23 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that neither Jiang et al., nor Boland et al., nor Schuster et al., teach classifying the audio signal further comprises turning on a flag in a header of a packet of digital audio information, wherein the flag provides an indication of classification of the audio signal (Amendment, pages 7 – 11).

The examiner agrees, but this limitation is now rejected in view Su(US Patent 7,127,390). See claim rejection below.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 2, 4 - 13, 15 - 19, and 21 - 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., (US Patent 6,901,362) in view of Boland et al., (US Patent 7,171,357), and further in view of Su (US Patent 7,127,390).

Regarding claim 1 and claim 16, Jiang et al. discloses a method for classifying an audio signal (see col. 1, lines 7-8), the method comprising:

receiving an audio signal to be classified (see fig. 1, where audio signal 106 is input in to audio analyzer 104 and col. 3, line 21);

dividing the audio signal at least into sub-bands compatible with speech and incompatible with speech (see col. 3, lines 34-39);

comparing the sub band energy to a threshold value (see col. 8, lines 57-67), and classifying the audio signal based upon the comparison (see fig. 4 steps 246 and 252, and col. 3, line 22).

Jiang et al. fails to teach calculating a ratio of the sub-bands energies and using the ratio to compare to a threshold value. However, these features are well known in the art as evidenced by Boland, which discloses a voice activity detector that uses energy ratios (see col. 1, lines 49-52). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use Boland voice activity detection method of using sub-band ratios because it can distinguish between speech and non speech sounds better than using just sub-band energy (see col. 1, lines 52-55).

Jiang et al. in view of Boland does not disclose wherein classifying the audio signal further comprises turning on a flag in a header of a packet of digital audio information, wherein the flag provides an indication of classification of the audio signal. However this feature is well known in the art as evidenced by Su. Su teaches that once the speech signal is routed to the rate determination controller, a predetermined flag in the header of the speech frame is analyzed to determine classification of the speech frame (col.4, lines 57 – 67). It would have been obvious to one of ordinary skill in the art at the time the invention was made to indicate the classification of an audio signal in a header of a packet so that the transmission of the classification would be guaranteed.

Regarding claim 2, Jiang et al. further discloses performing a Fourier Transform on the audio signal to transform the signal from time to frequency (see col. 5, lines 65-66).

Regarding claim 4, Boland et al., further disclose comprises integrating the sub-band compatible with speech, integrating the sub-band incompatible with speech, and calculating a ratio of the sub-bands (see col. 1, lines 49-52).

Regarding claim 5 and claim 21, Jiang et al. further discloses wherein classifying the audio signal based upon the comparison the ratio to the threshold value further comprises, if the ratio is less than the threshold value then the audio signal is classified as speech (see col. 8, lines 57-67).

Regarding claim 6 and claim 22, Jiang et al. further discloses wherein classifying the audio signal based upon the comparison of the ratio to the threshold value further comprises, if the ratio is greater than the threshold value, then the audio signal is classified as music (see co. 12, Table 1).

Regarding claim 7, Jiang et al. further discloses wherein dividing the audio signal into sub-bands compatible with speech and incompatible with speech further comprises dividing the audio signal into a first frequency sub-band comprising frequencies below 4 KHz and a second frequency sub-band comprising frequencies above 4 KHz (see col. 8, lines 34- 35).

Regarding claims 8 and claim 23, Jiang et al. further discloses wherein upon classifying the signal as one of speech and music, a classifying sub-band may be further divided and additional ratios calculated to provide more detailed information regarding an identity of a sound producer of the audio signal (see c01. 13, lines 9-10).

Regarding claim 9, Su further discloses classifying the audio signal occurs prior to encoding the audio signal (col.4, line 65 –col.5, line 10).

Regarding claim 10, Su further discloses classifying the audio signal occurs after decoding the audio signal (col.4, line 65 –col.5, line 10; col.6, lines 24 - 30).

Regarding claim 11, Su further disclose converting the audio signal from an analog signal to a digital signal (col.1, line 29);

encoding the audio signal (col.5, line 7);

packetizing the audio signal ("frames"; col.4, lines 57 -60);

transmitting the audio Signal (col.3, lines 34 – 37)

decoding the audio signal (col.6, lines 23 – 27)

and processing the audio signal, wherein processing at least comprises one of storing the audio signal and playing the audio signal ("memory"; col.3, line 66 –col.4, line 5).

Regarding claim 12 and claim 18, Jiang et al. further discloses wherein the threshold value used in the comparison is pre-determined and pre-set by a user (see col. 4, lines 28- 30).

Regarding claim 13 and claim 19, Jiang et al. further discloses wherein the threshold value used in the comparison is determined through trial and error of a plurality of iterations in a comparing device (see col. 8, line 13-18).

Regarding claim 15, Jiang et al. further discloses wherein the audio signal is one of an analog signal and a digital signal (see fig. 1, element 106, col. 3, lines 23-25).

Regarding claim 17, Jiang et al. further discloses wherein the plurality of mathematical functions performed on the audio signal may comprise at least one of a Fourier Transform, squaring an amplitude, separating an audio spectrum into sub-bands, integrating the sub-bands, and calculating a ratio of integrated sub-bands (see fig. 3 element 222).

4. Claim 3, is rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al., (US Patent 6,901,362) in view of Boland et al., (US Patent 7,171,357), further in view of Su (US Patent 7,127,390), and further in view Yamada et al. (US Patent 6,993,484).

Regarding claim 3, Jiang et al. in view of Boland et al., and further in view of Su do not disclose squaring the amplitude of the transformed audio signal and associating energy with frequency. However this feature is well known in the art as evidenced by Yamada et al. who discloses squaring the amplitude of a signal. It would have been obvious to one of ordinary skill in the art at the time the invention was made to square the amplitude of an audio signal to the power value (see col. 1, lines 50-53), also known as energy distribution.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO- 892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD SAINT CYR whose telephone number is (571) 272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.



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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LS

04/03/08

/Richmond Dorvil/

Supervisory Patent Examiner, Art Unit 2626